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NURSING SISTERS.

IN London there are institutions of an interesting character, about which the majority of its inhabitants know very little, many of them nothing at all. Of one of these I was myself entirely ignorant, till made aware of its existence by an illness which rendered the knowledge of it necessary. Then I became practically acquainted with an organisation, or rather a number of organisations, whose aim and action are of such benefit to suffering humanity, that I deem it a duty to make them known as widely as possible. They are designed to educate and supply nurses, and act independently of one another. That with which I have been brought into closest contact, will give a fair idea of them all. It is specially known as the 'Institution of Nursing Sisters,' and was established in the year 1840, by the celebrated Quakeress philanthropist, Elizabeth Fry, who bestowed upon it the name 'Protestant Sisters of Mercy.' The less sectarian title is, I believe, due to the late Queen-dowager, who, having been attended by certain of the 'Sisters' during a severe illness, saw fit to suggest the change.

It is now under the patronage of a list of distinguished ladies, while another list constitutes its active and working committee. But the real official staff consists of a 'Lady Superintendent' and a 'Matron,' who give all their time to the direction of its affairs, and are, of course, in receipt of pay for their services. The headquarters of the Institution, technically called 'The Home,' is a large house in Devonshire Square, Bishopsgate Street, close to the site of what was, in days long gone by, a splendid mansion of one of our nobility. In it the Sisters have their home, when off duty; hence the name, in every sense appropriate.

There are at present on the books of the establishment, and in active service, somewhat less than a hundred trained nurses, though there are several 'candidates' in course of training, who would nearly make up the above number.

The mode of initiation is as follows: An aspirant to the profession presenting herself at the Institu-

tion must be of a certain age (twenty-eight is the minimum at present insisted upon; but I believe it is the intention to receive more youthful candidates, as is the case in some other institutions); she must be unmarried, or, at all events, without a living husband; and, indeed, a large proportion of the Sisters are widows. She must come provided with credentials as to character; and to prevent any frivolous or temporary engagements, as also partially to cover the expenses of her maintenance during the period of her probation, she is required to deposit two pounds in the fund of the Institution, which is returned to her, at the rate of five shillings a week, during the first two months of her engagement. The probation itself is an attendance of four months in one of the hospitals; Guy's being that which generously extends this privilege to the Institution in question. The 'candidate'—for such is the special title now given her—must attend daily at the hospital, assisting the regular nurses of the establishment, and so becoming acquainted with the details of her intended vocation. During this attendance, she is allowed a sufficient sum to purchase her daily dinner, eaten at some neighbouring restaurant: at night, returning to the Home, which provides her with bed, board, and washing. The period of her probation ended, she is sent out to private patients; and, if proving capable, at once promoted to the full rank of a Sister. Otherwise, she remains some time longer a candidate. In the latter capacity she is paid ten shillings per week, but only during the time she is actually engaged in nursing. When returned from a *turn* of duty, and residing at the Home, her pay ceases, though she is provided with everything else. On attaining the title of Sister, she receives a regular salary, graduated according to the years of service. For the first three, it is twenty pounds per annum; for the second three, twenty-three pounds; after which, it is raised to twenty-five pounds. In addition, she receives annually a sufficient quantity of appropriate apparel, and is maintained in the Home during the intervals of her engagements.

Having completed a service of fifteen years, she

is a 'Superannuated Sister,' and becomes entitled to a life pension of twenty pounds per annum. She can then retire from the Institution, and practise nursing on her own account; which some Sisters do, having naturally, during their long period of service, established a *clientèle* ready to receive them. The Institution has no jealousy of them; on the contrary, it gives aid to the Superannuated Sister, obtaining patients for her, when she is deemed deserving. Within the fifteen years, a Sister cannot retire from it abruptly, or at her own pleasure; by her contract on entering, she binds herself to certain conditions, which the law would compel her to observe. One of these has a special bearing upon her retirement. She can do so, during the first nine years of her engagement, at the expiration of every three; otherwise, she must give three months' notice of her intention, and pay a forfeit of six pounds.

On seeking admission to the Institution, the applicant is required to sign a form, setting forth the conditions of her being accepted. These are put as interrogations, the most important of which, in addition to those elsewhere mentioned, are: Whether they will be willing to attend upon poor patients as well as rich ones; what religious denomination they belong to; how they have been employed previous to making application; and whether willing to wear the prescribed dress of the Institution, avoiding all conspicuous trinkets while residing at the Home, and during their hours of attendance upon patients. It may be remarked, in reference to the last condition, that, although the Devonshire Square Institution, with many of the others, provides a sort of semi-uniform for the Sisters, they are not compelled to wear it while on a visit to friends, or walking out for recreation. The uniform is in no way conspicuous, and would scarcely attract attention on the street.

I now come to speak of the duties devolving on the Nursing Sisters. When application is made for their services—which is done without any special form, but merely by letter, or personally—if there be one disengaged (unfortunately, not always the case), she is at once sent to the patient or family so applying, or as soon as the necessary inquiries can be made, and satisfaction obtained that the application is a proper one. The remuneration for her services is one guinea per week, exclusive of her maintenance while residing in the house of the patient. Many of the institutions have a scale of charges graduated according to the character of the disease; for instance, in cases of zymotic or infectious, as also mental diseases, the amount is double, or two guineas per week. By the Devonshire Square Institution, a reduction below the charge is not unfrequently made, where a case of necessity is deemed worthy of it; and in still more necessitous circumstances, a Sister is often sent gratuitously. While on duty, the Sister is expected to reside in the house of the invalid, giving all her time to her task, bed and board being of course provided for her. And the payment is not made to herself, but to the lady superintendent; nor is she permitted to receive any gift or gratuity beyond some trifle, such as a book; this being a rule of the establishment in question, though not of some others, where a less rigorous *régime* prevails. Not unfrequently, grateful patients insist upon making a money

present, or leaving a legacy to the Sister who has nursed them. In such cases, she must declare it to the lady superintendent, and also make over the amount to the general fund of the Institution, where it is held for her in trust.

In the Institution of Nursing Sisters, the regulation against receiving gratuities, unless under the above conditions, is rigorously insisted on, and an infringement of it punished by dismissal. In some other establishments, however, there is not the same strictness in this regard; and where gain is the object, such perquisites are not only permitted, but the giving of them encouraged. Happily, this last class of nursing institutions is in the minority; in most of them, as already said, the aim being purely philanthropic. But even where it is not so, they are worthy of being encouraged, as useful adjuncts to a humane civilisation. The services rendered by them cannot be too highly spoken of; for there is many a case of sickness in which the sufferer is absolutely in need of their assistance; the dearest relative, or the most devoted servant, being unable to cope with it; while the doctor cannot be always there. It is then that the Nursing Sister appears by the sick-bed in the light of a ministering angel; and there are many admitted instances of life having been saved by their skilled and assiduous ministrations. Knowing the too frequent failings of nurses of an ordinary type, there are those who hesitate to employ them. This is a prejudice to be got over. The Nursing Sisters I speak of are women of graceful manners and modest deportment, and, as a general rule, religious. Many of them are most respectably connected, and so far from being repellent in aspect, as nurses are generally supposed to be, some that I have seen are exceedingly comely. And cases are on record where the Nursing Sister has become the wife of some rich invalid whom she has tended into convalescence. As a general rule, their behaviour, while residing with the family that employs them, is everything it should be; and instead of being thought in the way, they come to be regarded in the light of friends and comforters. Of course, if not proving satisfactory, they can be at any moment dismissed; though they cannot of themselves voluntarily withdraw without permission from the lady superintendent, who does not give it capriciously, or without good cause.

When a Sister is off duty, that is, returned from attendance upon a patient, the Home becomes her residence, and then she has the privilege of resting; but only for two clear days, should her services be required elsewhere. At the present time, so great is the demand for their valuable assistance by the sick-bed, that it is rare when one of them gets a single day of repose, beyond the prescribed number. They are almost instantly summoned away to administer to the necessities of some other sufferer.

When the case on which they have been attending is one of an infectious character, they do not return direct to the Home, but to a private house in connection with it, kept by one of the superannuated Sisters. There they must remain till all danger is supposed to have passed, a room and bed being provided them; while their board is assured by a payment of fifteen shillings stipulated to be made by the party last employing them. If one of the Sisterhood chances to be herself taken ill, she is attended and nursed by another, remaining

permanently at the Home, where she also receives gratuitously the services of a medical man who attends the establishment. As a Nursing Sister need be at no expense for her living, beyond some trifling articles of wear not allowed by the Institution, many of them have accumulated some little stock of worldly goods. As it would be inconvenient to carry these with them to the houses of their patients—often in distant parts of the country—the Home provides storage for such effects, a large apartment in it being specially known as the 'Box-room.' In this may be seen boxes, trunks, and portmanteaus of all shapes and sizes, many of them containing valuable properties, that may not be utilised till the period of superannuation arrive.

In addition to the Institution in Devonshire Square, the others of most note are :

The 'General Nursing Institute,' which has its offices at 5 Henrietta Street, Covent Garden. This Institute provides both male and female nurses, and for all maladies, mental as well as physical. The scale of its charges, according to published circular, is one guinea per week for ordinary infirmities ; two for those that are infectious, or where there is 'insanity unaccompanied by violence ;' and three in cases of 'active mania, delirium tremens, or suicidal tendency.' It likewise provides the special class of attendants known as 'lying-in' and 'wet' nurses.

'The St John's Home and Sisterhood,' under the presidency of the Lord Bishop of London, has its headquarters at 7 Norfolk Street, Strand. The scale of charges of this establishment is nearly the same as those of the Devonshire Square Institution, only that, after eight weeks' attendance upon a patient, the guinea a week is increased to one and a half ; which seems an ill-adjusted plan of remuneration, the very opposite to what one would suppose it ought to be. A second singular rule of the St John's establishment, as set forth in its circular, is that, 'after eight weeks' attendance upon a patient, the nurse must return, or be exchanged for another.' Surely the nurse who has become acquainted with the patient's malady should remain, instead of being replaced by one who has yet everything to learn about it. A prescribed rule is that the nurse is 'required always to wear her proper dress, including the neat white cap, collar, and linen apron, with print gown—no crinoline to be worn in the sick-room.'

'The London Private Nursing Institute,' Suffolk House, 220 Marylebone Road, provides nurses at nearly the same scale of charges as the Devonshire Square establishment ; from this, however, it differs in the speciality of receiving patients to reside in the house as above, charging for their board, nursing included, from four to eight guineas a week, according to the accommodation ; but, where the invalid occupies only part of a room, from two to three guineas.

'The Association of Trained Nurses and Male Attendants,' 37 Davies Street, Berkeley Square, provides 'midwife, monthly, medical, surgical, fever, and small-pox nurses ; also mental attendants, male and female.' It furthermore furnishes 'medical rubbers,' a phrase which may perplex the reader, until told that there is a class of personages whose rôle is that of rubbing the skins of rheumatic, gouty, or other invalids who suffer severe pain. Those who devote themselves to this

strange calling acquire great dexterity and skill in it, for which they are paid high prices. The nurses provided by the Davies Street establishment, as we are officially informed, 'have their own homes, and also their earnings, simply paying a commission to defray the expenses of the conduct of the association.' Their scale of charges is also higher than the others, as learned from their published card, which says : 'The Association of Trained Nurses is a union of select private nurses, several of whom are widows, and have children to support, and who cannot therefore accept the very low terms offered by the Nursing Institutions.'

In addition to the above, there is also an 'Institution for Trained Nurses' in Wimpole Street, Cavendish Square ; one of somewhat similar title in New Cavendish Street ; and a third in North Audley Street ; with several others of less note, or more limited in their operations ; but all in their respective spheres doing good service to suffering humanity. And, besides, many of the large hospitals have Nursing Institutes attached to them, as useful appendages to their more important work. Among these may be mentioned St Thomas's, St George's, King's College, and University College. Such are the nurses of the great metropolis. Give them all praise for having devoted themselves to a calling markedly humane, as it is arduous, dangerous, and uncongenial. These particulars may stimulate the establishment of Institutions for trained nurses in the large centres of population throughout the country.

WALTER'S WORD.

CHAPTER XXXVII.—HARD TIMES.

FOR a long time, Walter walked on in darkness, painfully stumbling, as his companions moved rapidly along, notwithstanding that two of them kept close beside him and held him by the arms, as before. He believed them to be Santoro and Colletta, but not a word was now spoken by any one, even Corrali himself. At the expiration of about an hour, the bandage was removed from the captive's eyes, and he found himself in a locality that was altogether strange to him. The sea had disappeared, nor could the white summit of Etna be seen in the distance, as when he had last looked forth ; but he knew by the direction of the sun that they were marching towards that mountain, that is, to the south-east. The way was steep and difficult, to which circumstance, rather than to any mercy upon the captain's part, he attributed the removal of the bandage. There was no mercy to be read in the blood-shot eyes of the brigand chief, which roved hither and thither, more like those of a wild beast in search of prey, than of one who was beset by hunters. At times, he would stop for a few seconds to sweep the landscape with his spy-glass, but otherwise, there was no halt. Now plunging down steep ravines ; now clinging to the sides of sheer precipices, upon a path on which there was room for but one foot to tread ; now pushing through tangled scrub ; now leaping from rock to rock across brawling torrents, they hurried on. Yet the brigands shewed no signs of fatigue. Walter could not but admire the unrelaxing vigour

of their strides, and the indifference with which the various obstacles to their progress were met and surmounted. He had long ago given up his first opinion as to their want of activity, but it seemed to him now that their muscles must be made of iron. Pride alone, dislike to own himself, as an Englishman, vanquished in athletics by men of a race whom he had always held to be indolent and effeminate, prevented him from throwing himself on the ground, and demanding at all risks a respite from this unceasing toil, while Santoro, a man nearly double his age, and who had had an extra journey that morning, as one of the bearers of Lillian's litter, strode on without a murmur by his side. To add to the difficulties of their forced march, the rain had begun to fall so fast and thick, that it not only wetted them to the skin, in spite of their capotes, but made the cliff-paths slippery and dangerous, besides shutting out the view beyond a few feet before them. To fall down some abyss seemed as likely as not to be Walter's fate, whose footsteps had become unnerved, and whose eyes were failing him; nor, in his desperate condition, did the prospect appear otherwise than welcome. Presently, as they descended into a little dell, up the other side of which he felt that his limbs could scarcely carry him, a small thin column of smoke was seen rising from the opposite bank. A halt was called at once, and the two men who had had charge of the cavern were sent forward to reconnoitre. Instead of returning, the brigand call was heard from the place where they had disappeared, and for the first time upon Corrali's face there appeared a look of satisfaction. Even this, however, did not last long, for, on their ascending the little hill, where, huddling around a scanty fire, were found the remainder of the brigand forces, he broke into passionate objurgations at their imprudence, and rushing at the cherished flame, extinguished it by standing on it with his feet. At this spectacle, a smothered murmur of disapproval ran round the band.

'What!' cried he, 'do you prefer, then, to be shot like Amalli, or taken prisoner like Manfred and Duano, rather than to suffer a little cold and damp? Suppose it had been the soldiers, instead of ourselves, who had discovered you here?'

There was no reply; his logic was indisputable; but the rain was also descending in a continued stream, and anything more wretched than the appearance of the whole party, it would have been hard to imagine. The camp, from which, as it seemed, the brigands had been driven out by the troops that morning, had been a paradise, compared with their present place of refuge. It was indeed, now that the smoke had ceased, concealed from observation by a circle of stunted shrubs; but those were of no avail to keep off the sheets of rain, nor the wind, which blew in furious gusts, straight from the snow-topped hills to eastward; the turf on which each man lay stretched was sodden with wet; nor was there a sign of either meat or drink to be seen among them. The sheep and goats had

evidently fallen into the hands of the soldiers; nor had there been time to secure so much as a leg of mutton or a morsel of kid.

'Have you brought bread with you, captain?' inquired Corbara sulkily.

'I have brought what I went for,' answered Corrali, frowning, and pointing to Walter. 'If you are very hungry, perhaps he may serve instead of bread.'

The captain spoke in bitter scorn; but Walter remembered with a shudder that among the frightful crimes he had heard imputed to this man, that of eating human flesh had been included. It was true that this had been done, not from hunger, but revenge: a shepherd, who had been pressed into the service of the troops to point out his hiding-place, having fallen into his hands, he had killed him, and broiled some of his flesh; but the recollection of this, joined to Corrali's grim reply, was indeed appalling.

'Where is the other prisoner—the English milord?' inquired Corrali sternly.

'We have put him under shelter,' answered Corbara, 'in a hole in the bank yonder.'

'You mean to say, you grudged him his share of your fire,' replied the captain contemptuously. 'But who is guarding him?'

'Oh, he is safe enough. The fact is, in order the better to keep him warm, and at the same time to make sure of his remaining where he was, we put a rope round him.'

'If he has come to harm, your life shall pay for it!' exclaimed Corrali passionately, and striding hastily towards the place the other had indicated. Walter followed, Santoro and Colletta, his shadows, moved, perhaps, by an impulse of curiosity, permitting him so to do, and, of course, accompanying him. The spectacle he beheld would have been ludicrous, had it not been so pitiful. In a hollow space at the foot of a thorn-tree, from which the wet earth had fallen away, and into which he exactly fitted, lay, swathed from head to foot in a sheepskin, like a mummy or an Indian child, the unhappy form of the British merchant.

'Why, they have trussed the man like a fowl!' ejaculated Corrali.

'Have you brought me a fowl?' cried Mr Brown eagerly, his knowledge of the Sicilian tongue, sharpened by appetite, enabling him to comprehend that single word.

'No, Milord Inglese; nor is it likely you will taste one in this life, unless your ransom reaches my hands pretty quickly.'

'At least you can cut his bonds,' pleaded Walter, 'even if you cannot give him food. Such cruelty will not bring your ducats a moment earlier.'

'Do you call this cruelty?' answered Corrali savagely. 'Ah, by Heaven, in a day or two, if the gold does not come, you shall see, what you shall see! In the meantime, however, as you say, the man may scratch himself, if he has a mind;' and drawing his knife, he stooped down, and with two slashes—which shewed the operation was no novelty—freed the captive from his bonds. Then, for the first time, the poor merchant, who had been lying flat on his back, with his face within a few inches of the wet earth, was enabled to recognise his fellow-prisoner.

'Ah, Mr Litton, what news of Lillian?' were his first words, as he scrambled into a sitting posture.

'She is in Palermo by this time, and in safe hands.'

'Thank Heaven for that!' cried the old gentleman fervently. 'Is she tolerably well? Has she been taken care of?'

'She was suffering from the shock of all she has endured, and from anxiety on your account; but the women who had charge of her had done for her what they could.'

'Ah, then, they are human, it seems—not like their husbands and brothers,' answered Mr Brown, with a gesture of disgust. 'Well, well, I must not grumble, since my darling is safe; but, may she never know what I have suffered!'

'Nay; I hope, in a few days, you may be able to tell her yourself; when your misfortunes, being over, will seem to you to have been less terrible than they now appear.'

'Ah, you don't know what I have gone through, sir!' answered the merchant, throwing up his hands. 'Nothing has past my lips, to begin with, since you left me. I have been shot at by a troop of soldiers; dragged up such precipices, as one would have thought only a fly could have kept his feet upon; and pricked with knife-points, until I ventured down them. This wet hole, into which they thrust me, seemed a couch of down for the first few hours, though I have, doubtless, caught my death in it. And to think, there have been times when I have fancied my sheets were damp, and clamoured for a warming-pan!'

It would indeed have been hardly possible to find a person of the male sex more unfitted to be hurried through a mountainous country, in wet weather, by a band of brigands, than the unfortunate merchant. He had never, perhaps, travelled in any rougher description of vehicle than an omnibus in his life, or inhabited any spot where such a convenience was not within call. Of late years—though he had given up his carriage to his daughters—he had scarcely made use of his legs at all; while his surplussage of breath had decreased as his girth had enlarged; and yet, there was a certain stubborn courage—a part of the same grit that had caused him to win his way in the world of commerce—which enabled him to wear a better front in presence of his persecutors than might reasonably have been expected. Even his complaints had a droll touch in them, and shewed no whining or despairing spirit—that is, while Corrali and the two brigands were standing by; but when the chief had withdrawn himself, and the others had removed to a spot nearer to their fellows, and yet from which they could exercise the needful supervision over their captives, the old merchant's voice began to tremble. 'Yes, these blackguards will see the end of me, Mr Litton; I can never stand such another day's march as this has been. If I was your age, there would be a chance for me, though I was never fit for much in the way of walking; but as it is, I would rather die in this hole here, like a rat, than suffer such fatigue.'

Walter was well aware that no such euthanasia as dying like a rat would be permitted his unfortunate companion, in case the ransom failed to be paid; but it was not necessary to inform him of that circumstance. He only expressed his hope that they would not again be disturbed by the troops, so as to render another retreat in face of the enemy necessary.

'In that case, my young friend,' answered Mr Brown, 'it seems to me that we shall perish of starvation. Nothing, as I say, has passed my lips—with the trifling exception of a raw onion—for the last ten hours. I would give its weight in gold for a hunch of bread and cheese; or for "a sandwich and a glass of ale," such as they used to sell in the old days in Holborn for fourpence. Think of a sandwich and a glass of ale!'

'I am afraid I can command neither of those delicacies, Mr Brown,' said Walter; 'but I believe I have something in my pocket—a bit of cold kid and a slice of bread, which was given to me by the signora'—

'Who was *she*? No matter; she must have been an angel,' interrupted the merchant with vivacity. 'I am sure you would not have mentioned it, had you not intended to give me a mouthful or two, eh?' and the old gentleman looked perfectly ghastly in his anxiety.

'My dear sir, you need it more than I, for I had a hearty meal before our march, and therefore you are welcome to the whole of it, such as it is.' And Walter proceeded to empty the contents of his pocket into the other's outstretched hand.

'Hush! be careful,' whispered the old merchant cunningly, 'or those rascals will observe us, and snatch the precious morsel for themselves. Mr Litton, you're a good fellow; you're a gentleman, you're a Christian! What mutton! Talk of South-down, talk of Welsh! I don't think I ever tasted such bread! Where do they bake it, I wonder? You must have a bit—just a little bit, even if you don't want it—or I shall feel like a pig.'

Walter did want it very much, and he accepted a small piece of what had been his own without apology.

'I know I am greedy,' continued Mr Brown naively; 'but I have no shame, and that's a fact. I have not had such an appetite since I was so high, and used to put the skid on the omnibuses. The signora, as you call her, didn't happen to give you anything to drink with it, did she?'

'She had no opportunity for that, I am afraid,' said Walter, smiling.

'Never mind,' said Mr Brown philosophically; 'there's plenty of water—I haven't a dry rag on me—you have only to make a hollow of your hand, and the skies fill it for you. To think that this is the Italian climate some fools are always boasting about!' It was astonishing how a little food had resuscitated the old gentleman. Come, I drink the signora's health, though in a liquid utterly unworthy of her. What did you say her name was?'

'The name of the lady who gave me the bread and meat was Joanna.'

'Well, Heaven bless her! I only wish she had given you some more. Here's to Joanna! There is no woman, with the exception of my own daughters, for whom, though I have not the pleasure of knowing her, I have so profound a respect.'

'I don't think Mrs Sheldon would like to hear you say so, sir,' observed Walter involuntarily.

'Mrs Sheldon? I don't care one threepenny-piece for Mrs Sheldon!' answered the old gentleman tartly. 'Why, it was through her advice that I was induced to come into this infernal country. And I don't mind telling you, that you yourself are making a great mistake, if you have

any high opinion of that woman. It was she who set me against you at Willowbank, and I believe she told me lies; for a man who will give such mutton and bread as that away, when he does not know when he may get another meal himself, cannot possibly be a bad fellow.'

There is no doubt that Mr Christopher Brown had come to a correct conclusion respecting his young friend; but the reason which had led him to it at last was curious enough, when one considers how many others, and better ones, might have convinced him of it before. The fact is, that human nature, when thrown out of the groove of convention, is very soon reduced to its primary elements. It would probably have taken some time to make a brigand out of this eminent British merchant, because, to become so, he would have had to learn as well as unlearn; but he was very fast returning to the savage, out of which state the self-made man springs, Minerva-like, to the admiration of all who are not personally acquainted with him. Had he fallen amongst a tribe of American Indians, he would probably have become not only acclimatised, but nationalised in a twelvemonth. The knowledge that Walter had lost his liberty in attempting to give aid to himself and Lillian, had evoked in him no such gratitude as the sacrifice had deserved; their position had not then appeared to him so dangerous; and above all, he had personally suffered neither pain nor privations; but now—now that Lillian was safe, and he had nothing to think about but his own wretched condition—the gift of the bread and mutton had appealed to all the feeling that was left in him with irresistible force, and carried his heart by storm. His observation with respect to Mrs Sheldon was perfectly genuine; he hated the woman as one of those who had induced him to take his ill-fated journey; but also because she had lied to him about Walter Litton, who had not only shared with him his last crust and kid, but offered him the whole of it. If the young fellow had done his best for the next ten years, under the conditions of civilised life, to conciliate Mr Christopher Brown, he could not possibly have made so much progress with him, as he had done in as many hours—and especially in the last few minutes—under the guardianship of Rocco Corrali. It is probable that, if he had even asked permission to woo his daughter, the old gentleman would not have refused him, in that moment of gratitude and comparative repletion; but, as Walter felt, and only with too much reason, it was no time to flatter himself with any such hopes, even if other circumstances had admitted of their being entertained. Their position in the brigand camp had become perilous in the extreme. Even if the required ransom should be raised without difficulty, there would be a hundred obstacles to its being paid. The government, as in all such cases, would forbid it; and now the troops had been called out, how was such a sum to reach the camp, when even the brigands themselves had escaped their hands only by the greatest exertions? That it would take time to do so, was certain in any case; a time of hardship and privation, such as one of the age and habits of Mr Brown was very ill fitted to endure; and, above all, was it likely that a man of the temper of the brigand chief would give them time? It was much more probable that, in some moment of impatient

fury, he would take his vengeance upon them both, and throwing interest to the winds, gratify a nature to which cruelty was at least as attractive as avarice.

ANIMAL LIFE IN MADAGASCAR.

THE large island of Madagascar has of late excited a special interest among the lovers of natural history; the richness of its soil has been acknowledged, and the character of its vegetation and of its animals classified. During the present century, Europeans have chiefly visited the northern part of the island, and expressed in glowing language their admiration of its shores. The Bay of Diego-Suarez, which is situated in the most northerly point of the island, is spoken of as one of the wonders of the world, and that of Passandava most enchanting. This, however, is not a fair picture of the whole; like other islands, it presents very striking contrasts. A recent traveller, M. E. Blanchard, who has visited certain parts of the island, chiefly to explore its mineral resources, describes in his book (*L'Ile de Madagascar*, J. Claye, imprimeur) the great chain of mountains and the desolate solitudes to the west of Imerina, where there are immense tracts that no one has trodden. In one part, nature displays her boundless riches, where the native can live without working, and civilised man procure the enjoyments of material life; in another, the ungrateful land scarcely yields any food; the rocks are sterile, the soil is bare, and a stream of water to render the existence of man or beast possible, is not to be found.

Climbing with difficulty the high, abrupt downs, the pathway has to be opened through thorny bushes, and plains stretch out at the summit; not a tree or shrub is to be seen; desolate, uninhabitable, and depressing as the deserts of Egypt and Arabia. After a long march through the sand, a new scene opens; the nopal is now found growing; a sure index to the abode of man. These plants, upon which the cochineal insect chiefly lives, are natives of America, but have long been naturalised in Africa and the south of Europe; the Arabs no doubt introduced them into Madagascar. Wherever a country is unwatered by streams, they are an invaluable resource for the inhabitants. Here, every family possesses its plantations of nopals, and gathers the fruit in a peculiar manner. With the point of their lances, they adroitly detach them, thus avoiding their redoubtable thorns; and roll them in the sand, to get rid of the silky covering which incloses these spikes, afterwards peeling them with the iron point of the dart. They appease hunger, assuage thirst, and permit the poor people to live in places where, for weeks together, water is not seen.

In these solitudes where the forests are immense, animal life can multiply without fear of man, and yet the fauna of Madagascar offer some singular features. The traveller can pass along without fear of the lions, leopards, and panthers of Asia and Africa; neither do zebras and quaggas gallop over the plains. In other countries, wherever the climate is hot enough, monkeys enliven the woods; here, not a single species is to be found. The horse and the ass are unknown; and, what is still more extraordinary, ruminants, such as stags and antelopes, are absent. It is true that there are large herds of cattle, which constitute

the great riches of the Malagaches, as the natives of Madagascar are called, but they have been imported probably from the southern part of Asia. This species is remarkable from its boss or lump of fat on the back, and is strikingly beautiful when seen in large herds wandering over the plains. The sheep too are peculiar, from their enormous tails, which consist of a mass of fat—a common feature in those belonging to the African continent. Goats are common, as well as wild pigs, which ravage the plantations; but these are supposed to have all escaped from vessels, and not to be indigenous to the island.

The monkeys of other lands are, however, replaced by the lemurs—graceful little creatures of many different varieties. There is a great resemblance in their attitude and manner of life to the ape, so that they have been styled monkeys with the fox's muzzle. Their agility is marvellous; they leap through the air to a great distance, settling on a branch, which perhaps bends under their weight, and dart off again in evolutions of astonishing rapidity. A wood frequented by troops commands the astonishment and admiration of the traveller, from the intelligent appearance and incessant gambols of these lively animals. The largest kinds are about three feet in length, whilst the smallest are not larger than a rat. The true lemur, which is distinguished by a long snout and tail, prefers fruit for food, but does not object to crunch a small bird, a lizard, or insects. These are diurnal in their habits; whilst the chirogales, possessing short paws and pointed teeth, shun the light, and only appear in twilight and moonlight, when they make great havoc among lizards and small game. These curious mammals are characteristic of Madagascar; other species do exist elsewhere, but the nocturnal kind are found nowhere but in this and the Comoro Islands.

In the most solitary parts of the south-west region lives that strange creature, the aye-aye or *chiromys*. A nocturnal animal, gentle and timid, it is about the size of a cat, with a large head, round full eyes not dissimilar to those of the owl, an enormous tail, and most extraordinary formation of the fore-paws; the middle finger being long and slender. This, which looks like a deformity, is, in truth, a wonderful arrangement of nature for its special way of life. As it lives on the larvæ hidden in the trunks of trees, the finger can be easily introduced into the fissures from which it tears the coveted prey. Naturalists think it forms a link between the squirrel and the monkey. The Malagaches seem to be impressed with a superstitious dread of the animal, owing to its sleeping all the day in the most secret haunts; nor do they ever molest it, astonished as they seem to be by its peculiar physiognomy and movements.

There is another class of mammals peculiar to this island, which are called *tendraks* by the natives, and seem closely allied to our hedgehogs. Like these, they are covered with spines, but the teeth differ, and the tail is wanting; neither do they roll themselves into a ball, but hide the head between their paws when frightened. Seven or eight species have been discovered, with some variety in the spines, some being soft, and not covering the whole of the body. They are all nocturnal in their habits, and very good when cooked. As for the carnivora, they all belong to a very small type. The wild cat is a pretty crea-

ture. Its back is fawn-coloured, traversed by four stripes of reddish brown, and yellowish white under the body and the paws. The ichneumon, with its long thin body and shaded skin, also gains the admiration of the traveller; it is a fearful enemy to all small or weak animals, but one of the species feeds greedily on honey. Not the least curious is the *cryptoproctus*, of the size and appearance of a cat; but with feet formed like those of a bear, the entire sole resting on the ground. No other example of a plantigrade animal is known.

The masked wild boar, which is still more ugly than its European fellow, is the only mammifer met with both in Madagascar and Africa. It is a hideous creature, with high withers, low back, and little hair. It boasts of an enormous tubercle, supported by a bony prominence in the jaw, which renders the face of the animal extremely disagreeable. A species of gray squirrel, which lives in hollow trees, and bats, complete the list of the mammals yet known in Madagascar.

It is very different as regards birds; they can cross immense spaces; and so the tern, the petrel, the albatross, and many other well-known birds, abound in this island. It is a charming sight, on a sunny day, to see flights of ducks with brilliant and varied plumage paddling and diving on the rivers or lakes. One large species, with bronze and violet reflections, like metals, its white head and neck spotted with black, is a great favourite with the natives. A beautiful teal duck, only known here, has an exquisite blending of brown, fawn, and slate-coloured plumage, with fair white wings. In the marshes, stalks the proud Sultana hen, with its magnificent blue body, a red patch on its head, and coral feet adorned with a tuft of white feathers, by which it is easily distinguished among the reeds. The jacana, a bird of the water-hen family, is also peculiar to this place; mounted on long legs like stilts, and extremely long feet, it runs through the long grass, or upon the floating water-leaves, with wonderful rapidity.

The sacred ibis of the Egyptians is found in large flocks, as well as the green variety of Europe. The crested ibis is peculiar to the country; a beautiful bird, bright red, with yellow beak and claws; a green head, from which the long plume of white and green feathers lies back. Another bird, classed among the Gallinaceæ, is remarkable for the length of its beak; whilst the pretty blue and green pigeons afford plenty of sport for the lover of the gun. Near the streams, the *nelicourvi*, a green-plumaged bird, builds its nest among the leaves, composed of bits of straw and reeds artistically woven together. The magnificent cardinal, in its bright scarlet robe of feathers, black-spotted on the back, haunts the open glades of the forest; and on the banks of streams are numbers of linnets, wagtails, and humming-birds, which are almost as small and graceful as the American ones, in addition to possessing all their beauties. The one which is the most common is also the most beautiful, with its bright green body shaded with violet; the large feathers of the wings, brown edged with green, a violet band on the breast, succeeded by one of brown; and yellow beneath. The family of the cuckoos is well represented; the blue variety is a magnificent bird, common in the woods on the shore.

As for the Reptile class, it is pleasant for the traveller to walk through the forests knowing that the venomous species are unknown. Two hundred years ago, the old traveller, Flacourt, declared that the serpents were all inoffensive; recent experience confirms the fact. The largest is named *Pelophilus Madagascariensis*. There are others, such as the *Langaha nasuta* and *Crista-galli* (zoologists having retained the name they bear among the natives), which are very singular, from the prolonged form of the snout, arising from the skin being lengthened out. Beautiful lizards, covered with brilliant scales of olive or fawn, spotted with black, white, and yellow, hide themselves under the stones, in the moss, or in old trees. But Madagascar is especially the land of chameleons; in the heart of the forests, they may be seen crouched on the branches, calm and immovable, rolling their large eyes. The crocodile is the only creature to be feared, and accidents from it are very rare, as the inhabitants greatly object to venturing into water.

The insects of Madagascar offer a thousand types for admiration. There are valuable kinds, furnishing wax, honey, and silk; the first two forming one of the natural riches of the island. The bee peculiar to the country has a black body, red underneath; it is very abundant in the woods, and makes its nest in decayed trunks of trees, whence the Malagaches tear the comb.

But there was an epoch when much more remarkable animals lived in Madagascar. In the marshes near the river Manoumbe, at no great depth, a great number of bones of the hippopotamus, of colossal tortoises, and of the limbs and eggs of the *Epyornis maximus*, have been found. The eggs of this king of birds are six times larger than those of the ostrich; and it was at first hoped that, in the hitherto unknown solitudes of the interior, some living specimens might be found; that hope has, however, vanished, though it is evident they once existed in great numbers in the south-west part of the island. They were of various species, and of different sizes. At the same period, the hippopotamus must have been abundant, as the bones of fifty skeletons were picked up in a few hours. This species, of very inferior dimensions to that frequenting the Nile, is entirely extinct.

A TURN IN FORTUNE.

'THE time is short, now, Harry, my boy. The captain's on the bridge; steam well up; and the men ready to cast off the moorings at a word. I'll leave Dora and you alone for a bit; but you must curtail your leave-taking, I warn you, for it would never do for myself and the girl to be carried off to Alexandria, or even as far as Gib'— So saying, bluff, good-natured Dr Davenport, whose own best days had been spent on blue water, as the sea-going surgeon of this or that frigate, turned on his heel and walked towards the helm.

Dora's trustful, tearful eyes met mine. 'O Harry, come back soon to me!' she murmured, with trembling lips; 'and ah! dear, take care of yourself in that strange land that you are going to. I have heard such dreadful things'— And she paused, sobbing.

'Dreadful things, I am sure,' said I, laughing, as I pressed her little hand, 'about Japan and its two-sworded gentry, that chop Europeans to mince-

meat. Don't fear for me, my darling; remember that the country is not strange to me. I talk the language, after a fashion, and have found the natives, on the whole, a decent set of people when fairly dealt by. Come, we'll both look forward, cheerily, to the time when, in three short years or so, you and I can'—

'There goes the bell; now for the shore,' cried the doctor, hurrying up, and drawing his daughter's arm within his own, in the midst of general bustle and confusion. 'May God bless you, lad, and send you safe back.—Now, Dora.'

There were other partings than ours taking place at that moment on the deck of the *Alceste*, P. and O. steamer, outward-bound, from Southampton—partings between weeping wives and the bronzed husbands, going out again to India, and whom, perhaps, they might never see again; between parents and children, friends and brothers, but, so far as I know, of no affianced lovers save our two young selves. It was a wrench to the heart-strings, although I tried at the time to make light of it, or to seem to do so, that sad 'good-bye,' but it was soon over. Those who had come on board to bid farewell to outgoing passengers were hustled back over the plank that led to the quay; the plank was withdrawn, the ropes cast off.

'Go on ahead, there! Keep her away! Half speed'; and amidst the waving of hats and handkerchiefs, off went the swift steamer, bound for the East.

The story, up to this point, lies in a nutshell. I, Henry, more commonly styled Harry, Harland, had been at an early age sent to sea, first as midshipman to an Indianman, and then as mate, and had worked my way on to be first officer of more than one fine vessel trading in the China seas. I was nine-and-twenty when I came back from Japan, and, taking a holiday to visit my old grandmother, the last survivor of my immediate relations, at Rose Bank, Clevestead, Somersetshire, fell in love with Dora Davenport, the doctor's youngest daughter, and found my love returned. What was to be done? I had nothing but my own exertions on which to depend, and could rarely count on earning more than two hundred a year. Dora was as poor as she was good and pretty. The honest doctor had five children to maintain, and could spare us never a sixpence towards our future housekeeping. Nor had I any of those testamentary prospects which brighten the rugged road of many a needy man. My grandmother, good, kind soul, could leave me nothing. Her tiny income, an annuity, bought years ago with the relics and scrapings of our former property, of course died with her. We Harlands had been small squires in our day, estates country gentlemen, though the acres had been few, and it took but one spendthrift owner of the Grange to bring the lands to the auction-mart.

How was I to marry Dora? I could not find it in my heart to condemn the dear girl to a life of privations, in some seaport, on the meagre subsistence to be derived from 'drawing' a monthly portion of my modest pay. It seemed to be better, by far better, to forsake the sea for a time, and to settle down in some well-remunerated shore-going employment, at the other side of the world. For such a post, habit, joined with some aptitude for picking up foreign tongues, and appreciating outlandish customs, qualified me fairly well. For

four months I had kept the books of a firm at Hong-kong, and my employers were sorry to part with me, and more than once wrote to say that the 'godown' coolies had never been so tractable, or the 'hong' so regularly in working order, since my departure. Then, for a longer space, I had commanded a Chinese Clyde-built steamer, the *Firefly*, and only left her when I found that the pig-tailed owners expected their captain to combine a little piracy and arson with a spice of smuggling, where I had looked for nothing but legitimate trade. Fortunately, an old friend of my father's had recommended me to the notice of a wealthy English firm, Parker and Mills, lately established in Japan, and who were willing to bid high for a really trustworthy clerk, capable of transacting business with suspicious native customers, and of conciliating the proud and jealous feudal lords, whose bare word could at any moment paralyse foreign commerce in the lesser isles.

The liberal salary, and still more the prospective partnership, proffered by Parker and Mills, proved irresistible temptations to a man in my position. As managing clerk I should receive, in English money, nearly four hundred a year; and hopes were held out to me, should I succeed in raising the yearly receipts of the firm to a sufficient amount, that in 'about' three years I might be allowed a share in the profits. But to secure this appointment it was absolutely necessary that I should be at Nagasaki on November 1 of the current year, a period when, by local custom, accounts are squared, balances are paid, and a great deal of cash changes hands. The firm declined to wait longer than the specified time, which, after all, gave me all reasonable latitude for arriving in Japan. My travelling expenses were defrayed by Parker and Mills; and altogether the prospects which lay before me seemed fair enough. When once I should be a member of the 'house,' Dora and I could pitch our tent matrimonial, without running any risk of hardships, in the strange new land that was but yesterday thrown open to the encroaching West. She and her father had come as far as Southampton to see me off, and bid me farewell on the deck of the steamer that was to waft me along the first stage of the watery high-road that led to fortune.

The Mediterranean voyage, the transit to Suez, the descent of the Red Sea, and the doubling of Cape Comorin, were all effected in uneventful comfort. But at Point-de-Galle a disappointment did occur. The regular packet that should have been ready to convey mails and passengers Japan-wards, had sustained, on the eve of sailing, a severe accident to her machinery, occasioning a vexatious but unavoidable delay. Some of the outward-bound seemed scarcely sorry to have so good an excuse for a ramble on shore, and a short sojourn in the luxurious climate of Ceylon; but I, with one or two others who were eager to reach their destination, made immediate inquiries as to the quickest means of getting to the end of my journey.

'I scarcely know what to recommend, just at this moment,' said the good-humoured agent of the Peninsular and Oriental. 'If it were for Shanghai or for Hong-kong that you wanted a passage, there would be no difficulty at all; but Japan is another matter. Stay; to be sure there is the *Saucy Maid*, clearing out for Nagasaki harbour with an assorted cargo. A crank boat, but very fast, and with fair

weather and smooth seas will make the run at racing speed. Her passenger accommodation, I suspect, is none of the best; but old Captain Harris is not a bad sort of skipper, when you understand his ways, and he won't overcharge you for the trip.'

I found on inquiry that the *Saucy Maid* was a clipper-built barque, with very tall masts, and powerful auxiliary engines, to force her along in case of contrary winds or a calm. There was but one berth vacant in the small cabin-space allotted to passengers, and this was yielded up to me without a murmur by my former companions, who looked with dismay at the cramped quarters with which voyagers in the clipper were compelled to be content.

I was a sailor, however, and had less fear of roughing it in a vessel not built with any particular regard to a passenger's comforts than might have been excusable in a landsman. There could be no doubt as to the *Saucy Maid's* seven-leagued abilities of covering a stretch of sea, were the weather but favourable; while gruff Captain Harris, a rum-drinking veteran of the old school, was tolerably civil as soon as he learned that my own youth had been spent upon the ocean. For the rest of his passengers, who were, to use his own phrase, 'a queer lot—Parsee brokers, Armenian bagmen, and half-caste Portuguese from Goa'—he had a contempt that he did not care to conceal. Nor were his crew by any means such as a prudent commander would desire to rely on in moments of danger. There were too many Lascars and Chinamen, and the European sailors were chiefly foreign seamen from the north of Europe, patient, docile fellows enough, but not quite the sort of stuff one cares to have near one at a pinch. The weather was, however, beautifully fine, and on sailing, we soon saw the low blue line of the Ceylon coast hull-down in the distance.

'If the wind holds,' said the skipper, as we walked the deck together, 'why, Mr Harland, you'll sight the tall peak of Fushihama in fewer days from the time we manned the capstan to weigh anchor, than if the mail-steamer had not been crippled in her gear. I've been on this line, now, for nine years, and wonderful luck the old bark has had, I can tell you. Look how every sail draws, and how the water boils beneath her counter!'

But the luck of the *Saucy Maid* was destined to interruption. The fair breeze died away, and was succeeded by baffling head-winds, with the usual accompaniments of annoyance, tedium, and seasickness among the landsmen on board. The strong auxiliary engines carried us, in spite of the elements, through the water, but the consumption of coal was so great, that when a dead calm made our sails quite useless, the captain thought it best to bear up for the coast of the great island of Formosa, in hopes there to obtain a fresh supply of fuel from some one of the vessels likely to be then lying in the sheltered bay of Ilima. Coal bought under such circumstances was likely to prove a costly purchase, but time was of value also, and Captain Harris did not hesitate.

Unfortunately, as it appeared, not one of the few steam-ships which, along with a far greater number of sailing-vessels of every rig and nation, lay becalmed in Ilima roadstead and haven, could spare to us, at any price, a ton of the precious

black diamonds, without which our engines were mere inert lumber. There was nothing for it but to wait, and, as the tough old skipper said, to 'whistle for a wind.' Under this disappointment, the worst side of the captain's nature came uppermost. He was an illiterate old sea-dog of the Commodore Trunion sort, and in idleness knew no solace but the bottle. He was quarrelsome, too, in his cups, insulting the passengers, cuffing and cursing as he went among the crew, and leaving the care of the *Saucy Maid* to his first-mate, a quiet-looking young German from Bremen.

In the natural harbour, a rocky basin, almost landlocked, and overlooked by the sterile mountains of the interior, lay junks, lorchas, and proas, manned by dusky or yellow-skinned mariners of every nation from Malacca to the Corea, and with them were mingled European and American craft of different sizes, the finest of all being a huge American three-master, the broad and snow-white decks of which, and the excellent band of music which played at evening on her poop, often caused me to contrast the pleasant existence of her passengers with that which we perforce led on board the barque. She was indeed a fine ship, one of those giant clippers that can keep pace with even a steamer, when a fair wind fills their acres of swelling canvas, and was reputed to have a valuable freight. She was called, as the inscription in gold and colours on her stern informed all and sundry, the *Henry Clay*, bound for Japanese waters, and, like ourselves, awaiting the end of the calm.

I was standing near the taffrail, one sultry afternoon, when the surface of the sea was as smooth and unruffled as a mirror, and looking up at the savage heights that frowned on the western horizon, my mind now dwelling on the barbarous tribes that still, in their rugged fastnesses, bade defiance alike to Chinese cunning and European civilisation, and now reverting to quiet Clevestead, where doubtless my Dora was thinking of, and perhaps praying for me, when I felt a twitch at my sleeve, and looking round, saw beside me a lean little old sailor, whose jaunty jacket of white duck contrasted oddly with his weather-beaten complexion. Jerry was a broken-down man-of-war's man, once a petty officer on board a Queen's ship, but whose drunken habits had caused him to lose his rating, yet who, when kept from the grog, was, to my judgment, the best man on board the barque. Many a chat had I had with Jerry, but now there was an anxious expression in his twinkling eyes that I had never seen in them before; I noticed, too, that there was an ugly cut on his left eyebrow, from which the blood was trickling.

'Hist! speak low, Mr Harland,' said the man, in cautious tones. 'I'd rather not be overheard in what I have to say. He said, when he gave me this'—pointing to the gash on his brow—'that it was to cure me of croaking.'

'A smart knock it must have been,' said I, perplexedly. 'Who gave it?'

'Hush! the skipper,' whispered the sailor. 'He's like a madman, when deep in liquor, and he has been at the rum-bottle since noon. He gave me that, with his brass knuckle-dusters, because I made bold to call his attention to what you see out there in the offing.' And as Jerry pointed, I could faintly distinguish a long, low, leaden-tinted line on the far horizon. 'You're a seaman, sir. Do you know what's meant by that?' asked Jerry,

turning in his mouth the quid that he was sucking. I was obliged to confess that I did not. 'Nor by that?' he demanded, as the smooth surface of the sea, a mile or so out, suddenly became blackened and ruffled.

'Not I, my old friend,' I answered; 'unless it indicates the coming wind.'

'There'll be wind enough, your honour,' said Jerry dryly. 'You are a seaman, Mr Harland, as I said before, and ought to have an eye for what's coming.'

It was in vain, however, that I swept the horizon with my practised glance, endeavouring to descry the ordinary forerunners of dirty weather. The old seaman gave a grim chuckle, as if in exultation at his superior acuteness.

'You've seen what a gale's like, Mr Harland, of course, and a black squall, and a white one, maybe, though that's scarcer. Did you ever see what a typhoon was like?'

'A typhoon?' I repeated after him, cudgelling my memory as to what I had heard concerning this, the legendary terror of the China seas.

'No disgrace to you, sir, that you've not,' returned Jerry, in the same cautious tone as before. 'By Heaven's mercy, they are oftener talked of than felt! He'—jerking his thumb towards the hatchway of the captain's cabin—'never came in for one either, and struck me, and cursed me for a Jonah, when I begged him to let go another anchor, that we might have at least a chance of riding it out. You'll see a pitiful sight, sir, presently—that is, if you are spared. Them junks and proas might as well be nutshells when the rollers set in. And look at the Yankee captain, how he keeps his ship, the canvas brailed, not reefed, and cloth enough set to carry her and all aboard into the next world, as it's likely to do before morning!'

The old man shuffled off, and I felt exceedingly uncomfortable. With Captain Harris, since he had given way to his unlucky habits of drunkenness, I was not on very cordial terms, nor could I hope to bring the sullen, half-intoxicated commander of the vessel to take precautions against the coming evil. Nor was I quite sure that the evil would, after all, come to pass. The cat's-paw that had roughened the water had passed away, and all was bright again, save where the leaden-coloured streak lay to seaward. I opened my heart, however, to the first-officer, Mr Ernst; but although the civil-spoken young German heard me patiently to an end, and looked intently out for signs of a storm, I could not induce him to press his advice upon the skipper, or to take on himself the responsibility of dropping another anchor. On one point, a minor one, I did prevail. The top-sails were hanging loose from yard and clewline, and these, at my request, the mate caused to be close-reefed, a step for which, an hour or two later, we had reason to be thankful; when, on a sudden, a great bustle and noise began among the Chinese junks in the harbour. We could hear drums and gongs and wild outcries, and could see the pig-tailed mariners beating their breasts and gesticulating with every mark of terror and dismay, while from the seaward came the leaden-coloured cloud-bank, swollen until it rose skywards like a moving battlement, and preceded by a hissing sheet of snow-white foam.

'The typhoon! the typhoon!' cried a hundred

voices, and then the babel of tongues was overpowered by the terrible roar of the mighty wind as it reached us, tearing up the sea as the steam-plough cuts its furrow through loose sand, and throwing us on our beam-ends with a violence that made every timber in the *Saucy Maid* quiver and groan like some hurt animal. We righted, however, after a time, and then indeed did I witness a spectacle such as the oldest seaman but rarely beholds. Masts were snapping on every hand, as easily as though they had been the dead branches on a storm-beaten tree; cables were parting, bulwarks being washed away, and all the sea around was strewn with wreck, water-casks, hen-coops, boats, and loose spars, mingled together in pell-mell confusion.

Worse damage than this had, however, already been effected by the first onset of the typhoon, for half the native craft had foundered at their moorings, while the remainder were drifting before the gale, dragging their anchors, and in imminent danger of being dashed against the rocky sides of the haven. The European vessels were in better case, but several of them had lost booms and boats, and were tugging at their cables in a way that promised no good, unless the wind should abate. Of this, however, there seemed no prospect, since at each instant it appeared to blow harder; and as the great green rollers, crested with foam, came tumbling into the bay, I began to realise that our position was one of extreme peril. It must not be supposed that we were idle spectators of this awful scene. On the contrary, some five or six of us, Jerry being prominent, contrived to clear away and let go the best bower-anchor, while even the red-eyed skipper came on deck, almost sobered by the danger. Still the strain upon the cables was a fearful one, and at every fresh jerk, as the huge waves lifted the bark, I dreaded lest they should give way altogether.

'Help, help! For God's sake, help! or we perish!' such was the startling outcry, uttered for the most part by female voices, which struck upon my ear, as a drifting vessel passed us. It was the fine American ship, *Henry Clay*, but how changed! Her entire top hamper, mast and sail, stay and shroud, had been swept away; her bulwarks, figure-head, binnacle, and taffrail, razed by the furious sea, and only her lower masts and bowsprit remained standing. On the deck, huddled together like frightened sheep, were the passengers, with some two or three sailors at most mingled with them.

'What has happened on board?' I called out, through the speaking-trumpet which I had snatched from the shaking hand of the drunken skipper. 'Where is your captain?'

'Drowned!' answered a man, who looked like a steward, speaking through his outspread hands. 'Drowned, in trying to prevent the crew from taking to the boats, which were swamped as soon as they got clear of the ship's side. Help us, sir, or we shall go upon the rocks!'

But to give efficient help was at that moment impossible, and the *Henry Clay* went past us, on her road, as it seemed, to swift and certain destruction.

Meanwhile, many of the junks floated rapidly by, their lateen sails of plaited straw or striped cotton torn and flapping, while the wretches on board wallowed on the deck, in abject fear, calling

on Fo to have mercy, and to drive away the devouring dragon of the tempest. Some of these unlucky craft were dashed against one another until they settled down in the water; others were hurled against the rocky shore, and battered to pieces. Some escaped the fatal rocks as by a miracle, and drifted on, rotating before the force of the typhoon, which gradually veered towards the south. By this time we had managed to get up from the hold a spare anchor, and to bend on it another cable, so that we had hopes of riding out the storm. The American ship, which had brushed so closely by the cliffs that a biscuit might have been tossed on shore, came drifting past once more, and again the pleading cry was heard for 'help! oh, help!'

'I cannot bear this!' I exclaimed, turning to those on board of our own vessel; 'I cannot see Christian men and women drown thus miserably for want of bearing a hand. Who volunteers to man the jolly-boat, and board the American ship?' Jerry and two English fore-castle Jacks were the first to answer to the appeal; then came a fair-haired Swede, and a red-whiskered Dane, and a mulatto lad whom I had saved from punishment for some trifling breach of duty during the voyage, and who was grateful.

Six oars, all told. There was nothing to be expected from the Lascars, benumbed by terror and the drenching spray; or from the Chinamen, stupefied in part by superstitious alarms, and in part, too, by the drugs to which they had resorted as a physical means of lulling fear. The rest of the crew were not bold or ready-witted enough to back us; but although Captain Harris offered a growling opposition to my putting 'his best hands' into unnecessary danger, some spark of manly generosity was at last kindled in the old toper's breast, and he waved his gold-laced cap as I grasped the tiller-ropes and bade the men push off, calling out, hoarsely: 'Well done, my lad! If I'd been twenty years younger, I'—

I heard no more; but I have never forgotten that picture during all the years that have since elapsed: the vessel straining at her cables, the boat rising on the crest of a giant wave, the old man, his gray hairs bared, leaning over the shattered bulwark, and waving his cap towards us in sign of adieu. But at the time I thought little of it, having need of all my steersman's art to keep the frail boat from being swamped in the terrible sea through which we had to pass. We had a desperate struggle, too, with the rollers, before we could reach the American, for the mulatto boy and Jerry were both too weak to be efficient rowers, and we were tossed and tumbled to and fro, as if the boat had been a shuttlecock bandied about between two monstrous battledores, until I encouraged the men to a supreme effort, and reached the ship. Scarcely had I set foot upon the deck of the *Henry Clay* before an unexpected phenomenon varied the elemental war. The howling wind ceased, and a dead calm succeeded, during which the wash of the sea, deep and hollow, and the far-off cries of perishing sufferers, were alone audible. There was something perplexing in the sudden transition from a shrieking hurricane to absolute stillness.

'It's only the heart of the typhoon: it won't last, sir,' observed Jerry gruffly, and I lost not a moment in doing what little I could for the security of the vessel. A jury-mast was rigged, a storm-

sail and jib were set, and two of the sturdiest men posted at the wheel. Hardly had this been done, when, with a hideous shriek, the tempest burst upon us again, this time blowing from a quarter opposite to that from which it had last made its force felt, and bore us resistlessly before it. The lady passengers, who had till then believed themselves to be saved, and had been giving thanks to Providence for their rescue, now recommenced their wails and lamentations—and indeed the situation was one of no pleasant character. The storm had begun again with fury unsated, and wherever the eye turned, there were foundering vessels and a wild white sea. We were being hurried towards a rocky headland, the most northerly point of the natural harbour of Ilima, and beyond which lay the storm-beaten ocean, with its low-lying canopy of livid cloud seeming almost to mingle with the driving scud. Were we once outside of this stony barrier, a chance of safety, though but a poor one, remained to us; whereas, if driven upon the reef, our doom was certain. I made up my mind at once to face the open sea. 'Haul away at sheet and brace!' I cried; 'set another jib, forward there; and you at the helm, keep her away, yet a point away, do you hear!'

'Ay, ay, sir!' answered the steersmen, with the mechanical obedience of trained hands; but old Jerry exclaimed cheerily, as he helped to set the new canvas: 'Mr Harland's right. Nothing like sea-room, my lads! Haul away with a will, every one of you, and get steerage-way upon her.' By the mercy of Heaven, we rounded the headland, narrowly escaping the fatal contact with the jagged rocks, and were in clear water.

Once outside the harbour, I had time to glance around me; but on looking back to the wreck-strewn bay, I could see no signs of the barque which I had so lately left. In vain I swept the horizon with my pocket-glass. I could see several vessels bravely riding out the gale, and a diminished number of the native craft passively drifting under the force of the rollers and the wind; but of the barque, nothing. The *Saucy Maid* was gone! There was scanty time, however, to wonder or to mourn over the fate of those who had been on board of her. The charge of the ship of which I found myself acting commander, through so strange and sudden a catastrophe, was no light burden. The *Henry Clay* reeled and careened to a fearful extent, as she flew along with the speed of a race-horse, cleaving her way through the heavy seas that constantly deluged her decks. It cost us some trouble to induce the terrified ladies, and such of the male passengers as age or infirmity disqualified for exertion, to go below. Of every available hand that could pull a rope or tug at the spokes of the whirling wheel, we had sore need, and even then we were weak in numbers to work so large a vessel as the American clipper, and in weather such as would have tested the endurance of the strongest crew.

The remembrance of the next three days and nights haunts my memory still, at intervals, like the confused details of a ghastly dream. I had divided the men under my orders into two watches, as usual, but for myself there was no rest, since I had no officer who could share with me the responsibility of the arduous task which had been, so to speak, forced upon me. Always on deck, through darkness and daylight, through wind and rain, I

worked hard to save the ship and the lives of those committed to my charge. It was no slight labour. The foul weather—for on the skirts of the typhoon rough seas and strong gales were encountered—was not the only enemy with which it behoved us to do battle. Some sinking junk had come violently into collision with the American three-master, and we had scarcely lost sight of the mountain summits of Formosa before the carpenter reported an undue depth of water in the well, and that a dangerous leak, beyond his powers of plugging, had been sprung. We fought long and patiently to keep back this insidious foe; the clank of the chain-pumps was incessant, and even ladies lent their delicate hands to the toil, as worn-out men reeled away for a short repose; but more than once it seemed as though the water would win the victory, while all on board were spent and weary, and it was evident that an accident such as the snapping of a link or the choking of a pump would send the *Henry Clay* to the bottom of the sea. And all this time we staggered on under such sail as our improvised masts would bear, over a howling wilderness of waves.

Fine weather came at last; the wind and the sea abated, and after some trouble, I contrived to get a spare topsail lowered and secured across the leak, keeping out in great measure the influx of the green-blue water, so that a moderate amount of labour at the pumps sufficed to free us from immediate danger of sinking. I was able, too, for the first time, to take a solar observation, and after a brief calculation as to our whereabouts, I decided to bear up for Kiusu, the most southerly island of the Japanese group, which could not, as I judged, be above two hundred miles distant. Our troubles were not quite over, for a rickety jury-mast went by the board, carrying away with it two poor fellows who were aloft to reduce sail, and who were washed to leeward and drowned without the possibility of rescue. However, the prayers of those on board the *Henry Clay* were answered, and after another eight-and-forty hours of anxiety we sighted Kiusu, where Japanese pilots came off to guide us to our anchorage.

How vividly it comes back to me now, the scene of our arrival in the peaceful bay, the shores of which were studded with neat Japanese houses, overlooked by the peaks of blue inland mountains, several vessels of various flags lying at anchor, and a flotilla of boats containing sight-seers, native and foreign, among whom were Japanese ladies with fluttering fans and silken robes, hovering around the *Henry Clay*, whose battered state shewed how narrow had been her escape from destruction. I remember, too, that some officers from a British steam-corvette at moorings in the harbour had come on board of us, and were shaking me by the hand, and congratulating me, pointed out to them as I had been by the passengers of the great ship, the ladies among whom, in their simple gratitude, insisted on speaking of me as their preserver. And then, on a sudden, my eyes appeared to grow dim, and all things swam before them, and the sound of friendly voices reached me only as a deep, indistinct hum, like that of bees, and I dropped down swooning on the deck. Fatigue and anxiety had been too much for me, and before nightfall I was tossing to and fro in the delirium of a fever.

When I recovered my senses, I found myself, weak and ill indeed, but in a fair way towards

recovery, in a cot which had been charitably assigned to me on board H.M.S. *Nautilus*. Kind nursing, a skilful surgeon, and a robust constitution soon enabled me to be on deck again; and when the corvette was ordered round to Nagasaki harbour, I was set on shore, thinner and paler than when I had left England, but well and fit for work. I found, however, with dismay, on presenting myself at the counting-house of Messrs Parker and Mills, that my post was now occupied by another.

'Very sorry, indeed, Mr Harland,' said the senior partner, screwing up his parchment face into a grimace of what was meant for sympathy; 'but, you see, men of business cannot afford to indulge in sentiment. The vessel in which you were known to have left Ceylon having been reported as lost in the typhoon, with all hands, why, of course'—

In short, under the very natural belief that I, the accepted candidate, had perished in the wreck of the *Saucy Maid*, Messrs Parker and Mills had filled up the vacancy. After all, though I was not dead, I was wofully behind the stipulated time for my arrival in the merchants' office, and had no right to complain.

Of all the many foreign adventurers in that Japanese seaport, few, I suspect, carried with him a sadder or a heavier heart than I did, as I left the counting-house of those who were to have been my employers, and strolled listlessly down to the beach. What was I to do? The little cash I had would suffice to maintain me in idleness for a short time only; and then—not that I repined at the necessity—I must work for a living. A few weeks on shore, for the complete restoration of my health, I might allow myself, and then, no doubt, I should have to get afloat again as an officer on board some vessel in the coasting-trade. But, in resigning the bright hopes which had allured me to Nagasaki, I felt as though I were relinquishing all prospect of an early union and a happy home with Dora, and that was hard to bear. In no way of which I could think could I be likely to realise a speedy competence. Bread my former profession could afford me, but not, for many a weary year at anyrate, the means to marry. And Dora was too delicate to be fitted for a life of actual poverty. 'Almost better,' I muttered to myself, as, with downcast eyes and bowed head, I paced to and fro the Battery, where a Japanese sentry in a trim blue uniform was mounting guard over the bright brass cannon that peered through the embrasures.

'Almost better if I had gone down with Captain Harris and his crew in Ilima Bay, as I was rumoured to have done. Disappointment such as this can sting more bitterly than mere physical pain has the power to do. By this time, for aught I know, the news of my death may have been telegraphed to Europe, and reached Dora. What a stab to her fond little heart the tidings will be, and although they are false, yet I am a ruined man; and not for long years, if ever, can I hope to'—

'Why, Harland, Harland! Haven't you heard it? No; I see by your face, poor old boy, that you have not. Never mind! Let me be the first to wish you joy!' called out a frank, cheery, English voice, as a young naval officer, with whom I had formed a sort of friendship while on board the corvette, came up panting and laughing, and took me by the hand. 'I've been looking for you high and low,' said the good-natured midshipman;

'and so, for that matter, have Gibson and Mildmay. It's not always that fortune stands so well by a fellow who so thoroughly deserves it.' I stared in dumb surprise at the speaker, whose words seemed, under the actual circumstances of my position, to be fraught with the most cruel irony. 'We set up a rattling cheer when we heard it,' continued young Egerton, fanning his heated forehead with his straw hat; 'and old Sir Henry looked mast-headings and close arrests at us, until some one whispered that you had been a shipmate of ours, and then the admiral was mollified. The oddest thing is that you were not present; though, perhaps'—

'But why, in the name of common-sense, should I have been there? Or how, do you suppose, could all this have had any interest for me?' interrupted I, staring at my blithe young friend.

'Well,' rejoined Egerton, looking, in his turn, surprised, 'you do take your good luck coolly, Harry. It isn't often, old man, that such a wind-fall comes in any fellow's way, and I'm afraid that I should not prove so philosophically indifferent, in your place, to the good things in store for me. As it is'—

I looked at the lad with a sort of dull, puzzled wonder. He and his shipmates were, I felt assured, by far too generous-hearted to make a jest of my misfortune in losing my appointment. And yet, what a satire on my baffled hopes was this pretence of treating me as one of fortune's especial favourites! Then it occurred to me that the whole conversation must be based on some error or false assumption, perhaps owing to a similarity of name. 'Some mistake!' I faltered out, with a sickly smile.

'Not a bit of it!' said the midshipman, decidedly. 'The American commodore on the station quite concurred in the award, and the agents of the owners of the *Henry Clay* admitted it without grumbling. Why, Harland, any one would say that you were utterly unaware of your own claim, for salvage-money, on the ship you saved, and the cargo of which was of enormous value. Seven thousand pounds, I own, make up a tidy sum, but not a dollar too much, considering how near freight and ship were to Davy's locker, but for'—

I think he said more, but his voice sounded in my ears but indistinctly, and my eyes grew dim, as I reeled on my feet, and should have fallen, but for Egerton's supporting arm. When I recovered from this momentary weakness, I rallied my wits, and was able to learn the truth. It was a fact, that in bringing the American vessel safe into port, I had never contemplated the idea of any pecuniary advantage to myself. My first care, on landing, had been to seek out Messrs Parker and Mills, and to their counting-house my first visit had been paid. It was indeed news to me that the Court of Admiralty, or rather the local tribunal of the naval station, had allotted to me the large sum quoted, as my just share of the salvage of the *Henry Clay*, smaller rewards being assigned to Jerry and the other sailors. Nor was this all, for the gratitude of the passengers for their preservation from peril had led them to subscribe a sum of no less than fifteen hundred pounds as a testimonial to myself for the service rendered; and this, though with some scruples, I was persuaded to accept.

That I returned home at once may well be con-

jected; but having, in the bustle of the moment, omitted to write or telegraph the tidings of my safety, I burst into Dr Davenport's quiet dwelling at Clevestead with somewhat of the startling effect of a melodramatic ghost, and poor little Dora fainted outright at the sight of me. My darling—she was looking thin and pale, but happiness soon brought back the rose to her cheeks, and the brightness to her eyes—forgave me the thoughtlessness which had caused her some weeks of carking care; and two months later, we were married with the consent of all concerned. The money, which was in due course made over to me by the owners of the *Henry Clay*, enabled me to set up in business as a thriving ship-owner; and since that time I have commanded a fine vessel of my own, and have made prosperous voyages, but none which has effaced the memory of my desperate struggle for life on board the American ship, *Henry Clay*.

DEEP-SEA EXPLORATIONS.

IN FOUR CHAPTERS.—CHAPTER III.

On the 9th August 1873, the *Challenger* left Porto Praya. As it was desirable that the sections across the Atlantic should be parallel to each other, and as the next one was to be near the equator, it was necessary to reach a starting-point off the African coast to the southward, and, accordingly, a southeasterly course was shaped, parallel to the shore. The time was not lost in thus getting into position, as soundings were taken from day to day. On the 16th, the line parted after sounding at a depth of 2425 fathoms. On the 19th, the trawl was put over after sounding, and brought up a variety of animal forms, among which were nine large shrimps of a brilliant scarlet colour. The sea in this locality was extremely phosphorescent, and, there being no moon visible, its brilliancy was the more apparent, and fairly eclipsed the brightness of the stars. The unbroken part of the surface of the water appeared intensely black, like molten lead, whilst the crest of each wave was a line of clear, white light, and so luminous, that Professor Thomson was enabled to read the smallest print when sitting at the port of his cabin. The sails and rigging of the ship were thrown into distinct lights and shadows. The tow-net revealed pelagic animals in vast numbers, the majority of them being more or less phosphorescent.

On the 21st August the ship reached the position from which the third section across the Atlantic was to be made, and a course was shaped for St Paul rocks.

On the 23d, from a depth of 2500 fathoms, the trawl brought up some important additions to the natural history collection, three very curious fishes, one entirely without eyes, some bright red shrimps, star-fish, &c.; and on the 25th, some fishes, zoophytes, crabs, and prawns were the result of the haul. On the afternoon of the 27th, the delicate serrated outline of St Paul rocks was seen, and although the voyagers were perfectly aware of the exact dimensions of the group, the actual appearance was disappointing. The largest rock is only 60 feet out of the water, and is almost pure white, from being covered with a kind of varnish, composed of guano and sea-salt. On nearing the rocks, a boat was sent off, and a hawser having been

secured, after much trouble, the *Challenger* rode to it on the lee side of the rocks, the current running past with much force. The next day, the rocks were minutely examined, a labour not unattended with difficulty, and even danger, as the swell setting round and over the points, produced a confused sea, in which it was most difficult to land. The inhabitants consisted of only two feathered families, the *Booby* and the *Noddy*, but they were a most prolific race, for they were in myriads, and so tame that they were captured by the hand with ease. The only other animals found were a small scorpion, and a few crabs and spiders.

On the 29th, after a stay at the rocks of longer duration than any vessel had ever before made, sail was made for Fernando Noronha, which was reached on 1st September. Soundings on August 30th and 31st, and September 1st, shewed a depth of 2200 to 2475 feet, with a bottom of globigerina ooze.

It was Captain Nares's intention to make a stay of a few days at Fernando Noronha, as but little is known of its fauna, and, on the arrival of the ship, all seemed to promise a rich harvest to the naturalists. The governor blandly gave his permission for an examination of the island, when Captain Nares called on him; and extensive preparations were made for an onslaught on the animal and vegetable products of the land, and the sea that surrounded it. Whether, however, these extensive preparations frightened the governor, not being himself a scientific man, or whether that functionary suddenly became alive to his own importance, is not known, but he sent word recalling the permission he had given, and forbidding the capture, even of a butterfly. Captain Nares respectfully expostulated with him, but in vain, and as there was no object to be gained by the delay, the expedition left. Fernando Noronha is the penal settlement of Brazil, about fourteen hundred convicts being confined there; but beyond the seaboard of the island being the limit of the prison, there did not appear to be much confinement, the convicts living in detached huts, and cultivating their own little gardens. About two hundred soldiers compose the guard, and are in reality greater prisoners than those they look after; indeed, it was difficult to realise that the island was a prison, and the population felons. Some dredging was effected from the 3d to the 14th, but with no very great success. The bottom between Fernando Noronha and the Brazil coast was found to be very uneven. The deepest water obtained was 2275 fathoms, with the usual globigerina ooze.

The *Challenger* arrived at Bahia on the 14th September, and the officers were soon in great enjoyment of one of the most enjoyable spots of earth. This pleasant period, however, was of brief duration, as a case of yellow fever occurring amongst the crew, it was deemed advisable to proceed at once to sea, and get south to a temperate climate. The expedition accordingly left on the 25th, steering towards the Abrolhos shoals. Sounding was not recommenced until the 30th September.

On the 3d October, after sounding, the trawl was put over, and in heaving it in, the strain was found to be considerably greater than usual, and the idea that some great discovery was about to be made, occasioned much excitement, and numerous conjectures as to the nature of the coming prize. Unfortunately, however, just as the trawl had

reached the surface of the water, and was about to be secured, a swivel broke, and the rich prize, of whatever nature it may have been, soon resumed its position at the bottom of the ocean! On the 11th, a fine haul was made with the trawl, comprising fishes, prawns, corals, star-fishes, &c., greatly to the delight of the naturalists, and afforded some consolation for the loss they had sustained on the 3d.

On the morning of the 14th, the island of Tristan da Cunha was sighted, in $37^{\circ} 6' S.$ lat., and $12^{\circ} 18' W.$ long., and the next morning the *Challenger* anchored off the settlement of New Edinburgh, so named in honour of the Duke of Edinburgh, who visited the island in the *Galatea*. The group consists of three islands—namely, Tristan da Cunha, Inaccessible, and Nightingale Island. Upon the first of these is the settlement, consisting of a dozen neatly built houses, thatched with long grass, and containing eighty-six inhabitants. The property of the settlers in cattle, sheep, pigs, and poultry is considerable. These they sell or barter with passing ships; and by those who purchase from them they are found to be keen hands at a bargain, notwithstanding their isolation from the world. The community hold socialistic principles, but they tacitly admit as their head the oldest inhabitant, Peter Green, who married the daughter of the first chief, Corporal Glass. He holds more the position of father of the colony than governor, and officiates as spokesman and salesman; his opinion also is much deferred to.

The coarse but nutritious tussock-grass affords good pasturage for the cattle and sheep, and the potato is successfully cultivated, as also are cabbages, radishes, &c.; but the inhabitants are entirely dependent on passing vessels for bread-stuffs, as corn will not withstand the force of the heavy gales.

Information was received here that two Germans were on Inaccessible Island, where they had landed nearly two years before, and as they had not been visited from the settlement for a long time, it was doubtful whether they were yet alive. This information determined Captain Nares to visit the island; and on reaching it, the two men were seen, by the aid of the telescope, standing on the beach near their hut. They were overjoyed at being released from their imprisonment, and gladly accepted Captain Nares's offer to convey them from the island. Their story was a very romantic one, but as it has already been told in these pages (Sept. 5, 1874), we need only say that these two Crusoes, as they have been called, were happily relieved by the *Challenger* from their exile, and taken to the Cape of Good Hope.

From Inaccessible Island the *Challenger* went to the other island of the group, Nightingale Island, so named after a Dutch navigator who landed on it. At this island, the ascent to the higher ground is gradual on all sides. The tussock-grass is from six to nine feet high, amongst which penguins were literally in myriads. Progress in every direction was not only impeded by these animals, but almost barred, for they fiercely attacked the legs of the intruders, and their beaks being short and strong, it required a good thick boot to protect the wearer from injury. The smell in this penguinery is described as abominable, and in addition to this, the cry of the birds when disturbed

—something between that of a pig being killed and a kid that has lost its dam—was deafening, driving ardent and enthusiastic naturalists to rocks out of their reach.

The position of the island being fixed by the officers of the *Challenger*, sail was next made for the Cape of Good Hope. The weather prevented soundings being taken as frequently as was desired, but those obtained seemed to shew that a deeper channel existed on the east side of the Atlantic than on the west; but from the depths obtained at distances so widely apart, it would not be prudent to assert that such is positively the case, without intermediate observations. The *Challenger* reached the Cape of Good Hope on the 20th October.

The two most important physical results of the *Challenger's* explorations in the Atlantic Ocean relate to the contour of the bed of the ocean, and the general circulation of the deep waters. If the reader had beside him the tabulated results of the soundings of the *Challenger*, and were to mark upon a map or globe the positions by latitude and longitude, with the various depths given, and were then to draw with a pencil the contours for each five hundred fathoms from one line of soundings to another, he would find that the deepest hollow, or where the depth exceeds two thousand five hundred fathoms in the North Atlantic, commences near the coast of the United States and Bahama Islands, and then passes towards the African coast between the Canary Islands and Cape Verde Islands. With the assistance of soundings as obtained, two diverging gullies would be found running to the north, and two to the south; and it would also be observed, if the nature of the bottom were marked against each sounding, that wherever the depth reaches about 2250 fathoms, its character gradually changes from the usual gray-coloured globigerina ooze to reddish, and finally, in the deepest water, to red-brown mud or clay. (This mud is of so fine a nature, that when disturbed, it remained several days in suspension, giving the water much the appearance of chocolate.) These remarkable alterations in the nature of the bottom were duly observed and noted; and by a careful series of observations of the progressive change from globigerina ooze, it was found that the shells of the globigerina gradually lost their sharpness, and assumed a kind of rotten look and a brownish colour, this rotten appearance increasing until the lime of the shells disappeared, leaving the impalpable powder described. This discovery has a very important bearing on geological science.

One of the primary objects of the expedition was the ascertainment of the temperature of the ocean at various depths, and this, as we have already partially shewn, has been carried out with remarkable care and minuteness of observation, adding greatly to our knowledge of the great system of ocean circulation. The manner in which the results have been obtained is not easily described without the aid of diagrams. Suffice it to say, that beyond all doubt it is proved that the cold water, which is recorded as being in temperature but little above the freezing-point, is derived from a polar source, as was demonstrated by Dr Carpenter from the observations obtained in the *Porcupine*; that, as the water is shoaler between the deep water of the North Atlantic and the North Polar basin, the bottom water north of the equator is

derived from an antarctic source, and not arctic; and also that at the equator, notwithstanding the great increase in the heat of the surface-water, the temperature decreases more rapidly with the depth than outside the tropics; thus, with a surface temperature of 78°, at a depth of 60 fathoms, the temperature is 61·5°, the same as at Madeira at the same depth; and at the depth of 150 fathoms at the equator, the temperature is similar to that at the same depth in the Bay of Biscay.

After the ship was thoroughly refitted and prepared for the stormy weather she was likely to encounter in the southern seas, the expedition left Simon's Bay, Cape of Good Hope, on the 17th December, and commenced sounding operations at once.

Some examination of the Agulhas current was made, but the stormy weather and heavy sea prevented as many observations being made as were wished, and, as time was an object, further investigation was given up, and the ship made the best of her way, with the usual strong westerly winds, towards Prince Edward Island. On Christmas-eve, the weather was thick and misty; but on the afternoon of Christmas day, the mist cleared, and Marion Island was seen, and soon after Prince Edward Island, the peaks of both being shrouded in clouds.

On the following day they stood in for the north side of Marion Island, running along about two miles distant from the shore, looking for a spot where a landing could be effected. This was found on the lee side. The island appeared rough and inhospitable in the extreme, formed apparently of flat terraces of black volcanic rock rising to a height of 4200 feet, the summit being a succession of rugged nipples, with one roof-shaped peak very slightly elevated above the rest.

The landing was rather hazardous, but it was effected without accident. When *terra firma* was reached, a scene of wild desolation, such as is seldom met with, was spread around, the huge blocks of black stone washed here and there by the force of the sea, giving the idea of cyclopean buildings in ruins. It happened to be the breeding season of the albatross, and vast numbers of these beautiful birds were scattered over the land, having the appearance at a little distance of a flock of sheep grazing. Their nests, which consist of circular mounds of mud and grass about eight inches high, and a foot in diameter, suggest the idea of miniature round forts, the tops being slightly concave; on these the birds, after laying a single egg, take their position. They were very tame, and took but little notice of the intruders, so that many fine specimens, both of the birds and their eggs, were captured.

Three kinds of penguin were found here—one being the king penguin. It is a curious fact that the female of the king penguin makes no regular nest to hatch her young; but, on being disturbed when sitting, carries the egg between its legs in a fold of the skin, and again sits where she stops. This bird is closely followed by the sheath-bill, for the sake of the egg, which becomes its prize if the mother bird leaves it for a moment unguarded.

Some observations having been made for fixing the position of the island, all embarked in safety. It was intended to land on Prince Edward Island the following morning, but a strong breeze springing up compelled the ship to keep from the land; they, however, obtained some excellent hauls with the dredge, and in the evening bore away for the

Crozets Islands. Here the state of the weather and the heavy sea running prevented any attempt at landing; but one curious phenomenon was observed, which has had much to do with the partially successful observations of the transit of Venus, since made at Kerguelen Land. On approaching Possession Island, the sun was shining continuously on its south-east part, and the ship passed suddenly out of the fog into clear weather, with scarcely a cloud to be seen, the fog left behind looking like a wall, and the peaks of East Island, to leeward, being seen above a dense band of white fog. It was thus proved that the lofty hills of Possession Island had the power of dispersing the fog as it passed, so that whilst the weather side of the island was enshrouded in mist, the lee side was free from it. It was also observed that no albatross' nests were on the misty side, but that the clear part was thickly covered with them.

No seal-fishing is now pursued at the Crozets, and it is much to be feared that the indiscriminate slaughter of these animals will lead, if it has not already led, to their extermination. It having been found impossible to effect a landing, the *Challenger* bore away for Kerguelen Land, and anchored in Christmas Harbour on the morning of January 7, 1874.

Kerguelen Land, sometimes better known as the 'Desolation Island' of Captain Cook, is about ninety miles long, and half that distance in breadth, but the coasts approach so near to each other in some places, that the isthmuses which separate them are termed 'haulovers' by the sealers, from the facility afforded in getting from one coast to the other by hauling their boats over.

As the object of the visit of the expedition to Kerguelen Island was partly to ascertain the best locality for observing the transit of Venus, the ship did not remain in Christmas Harbour, but proceeded the next day to Accessible Bay, and came to in the snug anchorage of Betsy Cove, or, as it is generally called by seal and whale hunters, 'Pot Harbour,' from the fact of its being a place of general resort to render the blubber into oil. The *Challenger* remained a week at Betsy Cove, and, during her stay, a survey of the anchorage ground was made. Several large sea-elephants were also secured, dissected, and headed up in casks to be sent to England. Three or four schooners are engaged here and at Heard in sealing and whaling, one of which surprised the voyagers of the *Challenger* by its arrival at Betsy Cove. A bark annually calls from the United States to collect the proceeds of the fishing.

From Betsy Cove, the *Challenger* proceeded to Royal Sound, and anchored in Three Island Harbour, a beautifully secluded spot, with magnificent wild scenery. As much surveying was done as the weather would admit, whilst the naturalists were dredging, botanising, and collecting. At Royal Sound, it was determined to fix the stations for observing the transit of Venus; and not only did the English expedition for that purpose take up its position on its shores, but that also of America was established in another part of the sound.

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